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ABSTRACT

ERIC (Educational Resources Information Center) was the first attempt to develop a systematic way of collecting, storing, organizing, disseminating, and analysing information in the field of education. ERIC operates at four levels. At the top is the governmental level office, central ERIC, which supervises the ERIC Processing and Reference Facility, the ERIC Document Reproduction Service, and the ERIC Clearinghouses. Next come the sixteen Clearinghouses which are located at various academic centers in the United States and which serve as funnels for the acquiring and processing of information in separate fields. The commercial component of ERIC is made up of those firms concerned with the processing and reproduction of ERIC materials. ERIC publishes regularly the "Current Index to Journals in Education" for journal material and "Research in Education" for document material. Bibliographic data and abstracts are prepared for all material which can be obtained by computer retrieval. The fourth level of ERIC are the users who gain access to previously unavailable educational material. (WH)

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THE STRUCTURE AND OPERATION OF ERIC

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A Paper Presented

to

DR. I. D. Welt

In Partial Fulfillment

Of The Requirements For The Course

Seminar in Scientific and Technical
Information Systems 55.750

by

John R. Johnson

August 1974

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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"In the field of education - as in other disciplines - information as a commodity is recognized as an increasingly valuable national resource. This attitude was clearly substantiated in 1965 with the establishment of a national decentralized system in education supported by federal funds."¹ Prior to 1965 it was difficult to obtain "fugitive" papers concerning the field of education. The responsibility of collection and organization of educational reports was given to the Office of Education. Since many researchers did not bother submitting a report of their work, some documents of significant value were not made available to the educational community. It was then decided that a system had to be developed to ease the problem of inaccessible documents. The new system was originally called Educational Reference Information Center and eventually changed to Educational Resources Information Center (ERIC). "ERIC was the first attempt to develop a systematic way of collecting, storing, organizing, disseminating, and analyzing information in the field of education."²

The original plan was to structure the system as a set of state liaison officers, one from each state, who would be responsible for the collection of educational documents produced by that state. However, this concept failed in many states. I have found no coverage within the literature nor any personnel who has been able to explain exactly why the state agencies failed. My assumption is that the output of documents and the extent of research conducted in many states did not warrant the expense of funding an ERIC liaison office. Re-evaluation of the system brought about a new structure composed of geographically scattered centers rather than the regionally oriented state offices. The new decentralized

organization was established with three basic goals in mind.

1. The network should guarantee ready access to the world's English-language literature relevant to education.
2. The network should generate new information on important topics. Products should include bibliographies, state-of-knowledge papers, critical reviews, and interpretive summaries.
3. The network should infuse information about educational developments, research, findings, and outcomes of exemplary programs into educational planning and operations.³

The new organizational structure was divided into four operational levels. A governmental^{level} was set up to control the overall operation of ERIC. A non-profit level was composed of ERIC clearinghouses. A profit-making level supplied reproduction and computer services. The final level was composed of the users of the ERIC network.

The governmental level office, Central ERIC, was necessary because of the decentralized structure of the ERIC system. Central ERIC started at the Office of Education and later moved to the National Institute of Education within HEW. Its function is to be the funder, policy maker, and monitor of the entire ERIC network. The Central ERIC staff controls the contracts which regulate the operation of the ERIC Processing and Reference Facility (EP & RF), the ERIC Document Reproduction Service (EDRS), and all of the ERIC clearinghouses. To evaluate these components of the system, Central ERIC considers four basic areas:

- "1. Efficiency and cost effectiveness of all operations.
2. The quality of bibliographic publications which it prepares and disseminates (e.g., RIE, CIJE, special catalogues, and the like).
3. Contributions to the field of education...
4. Meaningful and profitable relationships established with professional organizations, the scholarly community, and other appropriate educational groups."

Central ERIC, therefore, is concerned not only with the operational factors involved in running the system, but also the image of ERIC and the professional ties to the educational community.

The non-profit component of ERIC is the individual clearinghouses. There are presently sixteen clearinghouses located at various colleges, universities and professional organizations throughout the United States. The purpose of these specialized centers is the acquisition, selection, and processing of documents within a particular area of education. There are ~~at least~~ two ways that each clearinghouse can acquire documents. Some documents are submitted directly to a clearinghouse by the author. In this case ~~this case~~ the clearinghouse will notify EP & RF of the acquisition. In an effort to minimize the possibility of two clearinghouses processing the same material, EP & RF will notify the other clearinghouses that the document has been acquired. A second way of obtaining a document is through EP & RF. When an author submits his work directly to EP & RF, this facility will then forward the document to the appropriate clearinghouse for initial processing.

The processing of a document includes cataloguing, indexing, and abstracting. The clearinghouse which is processing the material assigns an accession number to the document. This accession number is not the official ERIC number (ED number), but rather the clearinghouse accession number. A second number, the official ERIC document number, is attached at a later time by EP & RF. The clearinghouse also indexes and abstracts each document. From the responses to a 1973 interview of local Washington, D. C., clearinghouses I found that the documents are usually given less than fifteen descriptors. Also, each clearinghouse tries to use certain descriptors that are closely related to their specialty. For example,

the clearinghouse for Teacher Education tries to have "Teacher Education" as one of the descriptors for every document associated with that clearinghouse. Upon the completion of the necessary processing, a report is sent to EP & RF including an acquisition data sheet, accession log sheets, and report resume sheets. (See pages 10-12) To perform the necessary processing functions, a professional staff is required. The results of a small survey that I conducted indicated that the major area of professional degrees is in education and library science.

The commercial component of ERIC is made up of those elements, other than the clearinghouses, which are concerned with the processing and reproduction of ERIC material. Because of the time and expense of publishing, some of the ERIC products are produced by contractors. One of these contractors is MacMillan Information in New York. This company is responsible for the publication of Current Index to Journals in Education (CIJE) which is a monthly author/subject index to periodicals containing articles concerning educational topics. MacMillan also produces other indexes which are built by utilizing the ERIC data base.

Another contractor for ERIC is the ERIC Document Reproduction Service (EDRS). EDRS supplies upon demand or by subscription all non-copyrighted and copyrighted, with permission, documents announced in Research In Education. This reproduction and distribution service of ERIC is provided by Computer Microfilm International and can supply microform or hard copy reproductions.

A third, very important, component of the commercial level of ERIC is the ERIC Processing and Reference Facility located within the LEASCO Systems and Research Corporation. EP & RF is the "centralized information processing facility serving all components of the ERIC network."⁵

EP & RF perform many functions that aid in the efficient operation of the clearinghouses and EDRS. As I have previously stated, some documents are acquired by EP & RF rather than the individual clearinghouses. In this case the material is briefly examined by EP & RF to determine which clearinghouse should process the information. When a document overlaps two clearinghouse areas, it is sent to the primary clearinghouse for processing, and a notice is sent to the secondary concern to indicate the material is in the ERIC system and should not be processed by a second clearinghouse. EP & RF also performs certain screening operations which entail such functions as assuring the accuracy of the resume sheets sent in by the clearinghouses. Duplicate checking, manual and computer-aided, is done to keep to a minimum the number of documents that are placed in ERIC products more than once. After a clearinghouse has processed a document, it is sent to EP & RF where the ERIC document accession number is applied.

In the area of document analysis, only a small amount of indexing and abstracting are done by EP & RF. Most of this type of work is performed by the specialized clearinghouses. EP & RF also maintains the thesaurus used by the ERIC network. Requests for additions or changes to the thesaurus are sent to the EP & RF lexicographic staff who will work in conjunction with the clearinghouse and Central ERIC to determine if the alteration is justified. All necessary editing prior to publication of ERIC products is done by EP & RF. When the editing is completed, the material is prepared for publishing by placing the information on punched paper tape. The tape is then sent to the appropriate publishing facilities to be processed.

"The products of the ERIC program are of two types: the 'raw'

products (original reports such as those which are indexed in Research In Education and made available through the Educational Documents Reproduction Service) and the 'refined' products (reviews, 'state-of-the-art' papers, bibliographies, newsletters, and the like, which are produced by clearinghouses as part of the interpretive function of the system)."

The processing of raw materials follows a very structured plan. The documents arrive at the clearinghouse either directly from the originator or indirectly from EP & RF. At this point the literature is divided into two categories: report literature and journal literature. The clearinghouse then catalogues, indexes, and abstracts the document. The necessary information on the journal literature is then routed to MacMillan Information where the CIJE and other products are produced. The ERIC resume for report literature is sent to EP & RF where it is screened, edited, and punched on paper tape in preparation for publishing. Both the journal and report literature are also retained at the clearinghouse to make up a local file used by that clearinghouse. After leaving EP & RF, the information on report literature is directed to three places.

1. The information is all incorporated into the ERIC data base.
2. The punched tapes are sent to GPO where RIE is produced.
3. The documents announced in RIE are sent to EDRS where they can be reproduced upon request.

At this point the material is available to the user through reference and resource centers, which are separate from the clearinghouses, and also through EDRS and the ERIC clearinghouses.

The fourth level of the ERIC system is the user component. Anyone interested in retrieving information on some aspect of education can make use of the ERIC network. A person can manually search through RIE, CIJE, and the ERIC thesaurus followed by requesting specific documents from EDRS. Another alternative is to submit a request to the

appropriate clearinghouse, and a computer-aided search will be performed yielding relevant documents that can be acquired through an EDRS request.

To obtain some information on certain topics which were of interest to me, I sent a questionnaire to the local clearinghouses, EDRS, EP & RF, and Central ERIC. (See pages 13-15) As a result of the questionnaire I did receive some pertinent answers and the opportunity to personally interview some key people who directed me to other available literature. Unfortunately, the response to my questionnaire was much less than I had hoped. The interviews, however, did prove very interesting and many of my questions were answered.

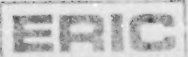
One area of interest to me was the creation of the ERIC thesaurus. Through an interview with Mr. James Houston of EP & RF and material supplied by him it was explained that the original work which preceded an actual published thesaurus was done by "free indexing" about 2000 documents in the field of disadvantaged children. The traditional thesaurus structure of narrower terms, broader terms, etc., were applied to this original vocabulary producing an unpublished version of the thesaurus. In 1966 the first thesaurus was published which was a combination of the work done on the disadvantaged children documents and work done on some research reports. Since that time, input from individual clearinghouses has been used to expand the thesaurus. At this time anywhere from zero to about fifteen new terms are considered each month as additions to the thesaurus. Not all terms submitted are approved. New terms are submitted on a descriptor justification form (see page 16) by indexers of a clearinghouse. The form states their opinions on how the term should be cross-referenced in the thesaurus and also giving the accession numbers of those documents in which the term was used. If the term is disapproved, Mr. Houston

would then go back to these documents and correct the use of the disapproved descriptors. The acceptance or rejection of a term is decided by a co-operative effort between Mr. Houston, Central ERIC, and the clearinghouse submitting the request. The creation of the ERIC thesaurus was therefore done in two phases. The first phase was the development of the initial vocabulary. The second phase was the development of rules which would be used to control the expansion of the thesaurus. This second phase was accomplished by an advisory group who surveyed other efforts of this type such as those conducted by the Engineering Joint Council and Project LEX.

Another area of interest to me was the extent of SDI supplied by ERIC. Of the replies I received from the local clearinghouses, one stated that I should consult Central ERIC, a second stated that they were not familiar with SDI, and a third indicated they would consider implementing such a service if there was a demand for it. From an interview with Ms. D. Slawsky of EP & RF, I determined that SDI was done on a limited scale by some of the clearinghouses but not by EP & RF. I also inquired as to whether the various components of ERIC considered themselves as information centers or as information analysis centers. As explained by Ms. Slawsky, clearinghouses are both in that they supply document information and also produce such things as reviews and state-of-the-art papers.

Although ERIC is a decentralized system, it appears to work as a very closely regulated unit. The eighth Annual Review of Information Science and Technology, chapter nine, implies that some people feel that ERIC has failed to meet its goals. However, the review also indicated that nine out of ten users surveyed felt ERIC had found documents for

them that they could not have obtained elsewhere. The question seemed to be between the practicality of the system with respect to satisfying its users and the formality of the system with respect to theoretical goals. As I have tried to express throughout this paper, ERIC was established to serve the people within the educational community. In my opinion, the ERIC personnel are justified in concentrating on the practicality and availability of the network in order to accomplish the function of service to the people.

Copyright?
YES NORepro. Rel?
YES NOAvail. Level.
I II III

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H1	AUTH									
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REPORT RESUME

Summary Instructions

FIELD IDENT	FIELD NAME	KEYWORD	MAX. CHAR. PER ENTRY	MAX. ENTRIES	TYPICAL ENTRY(IES)	NOTES
---	ERIC Accession Number	--	8(FL)	1	ED065432	LEAVE BLANK
A	Clearinghouse Accession Number	CH__	8(FL)	1	TM015432	Assigned by Clearinghouse.
B	Program Area	PA__	2(FL)	1	52	Code for Legislative Authority. (See Table)
C	Publication Date	PDAT__	7	1	14May73	Use ONLY following formats: 14May73, May'73, or 73.
D	RIE Issue	ISS__	8	1	RIEJUN73	LEAVE BLANK
E	Copyright?	--	1	1	X	Is document copyrighted? Yes or No
F	Reproduction Release?	--	1	1	X	Has release been obtained? Label on document? Yes or No
G	Availability Level	--	1	1	X	Level I - MF & HC; Level II - MF Only; Level III - Not available EDRS
H	Author(s)	AUTH__	50	2	Smith, John J.; Doe, R R Jones, B W.; And Others	One or two authors Three or more authors.
I	Title	TITL__	500 *	1	Indians in Maine	Include subtitle, translated title, etc.
J	Institution Code (Corporate Source)	INST__	8(FL)	4	BBB08456	See Source Directory.
K	Institution Name	--	200	4	Heuristics, Inc., Dedham, Mass.	See Source Directory.
L	Sponsoring Agency Code	SPON__	8(FL)	4	BBB05495	See Source Directory.
M	Sponsoring Agency Name	--	200	4	Army Library, Washington, D C	See Source Directory.
N	Contract Number	CONT__	25	2	NIE-C-74-0015	NIE and OE contracts ONLY
O	Grant Number	GR__	25	2	NIE-G-74-0025	NIE and OE grants ONLY
P	Project Number	BN__	15	2	BR-6-1820	NIE and OE projects ONLY
Q	EDRS Price	PRICE__	15	2	0 65.9 87	DO NOT enter dollar signs (\$).
R	Report Number	REPNO__	40	4	PB-178441, OE-12047	
S	Publication Type	PUBTYPE__	1(FL)	1	R	See Table.
T	Descriptive Note	NOTE__	300 *	2	157 p.; In French	ALWAYS pagination FIRST, then other data as required.
U	Availability	AVAIL__	300 *	1	Harper & Row, 49 E. 33rd St., N.Y. 10016. (\$8.50)	OTHER than EDRS. DO NOT enter "Available from...", etc.
V	Journal Citation	JNL__	50	2	Science; v27 n12 May73 p122-137	Semicolon after Journal Name.
W	Descriptors	DESC__	50	20 *	* Gifted, Grade 7	5 to 10 terms recommended. Asterisk (*) 3 to 4 major terms for RIE Index.
X	Identifiers	IDEN__	50	10 *	* Maine	0 to 5 terms recommended. No more than one (1) asterisked (*) for RIE Index
Y	Abstract	ABST__	1400	1	The teaching of a dialect modification.	About 200 words.

Note: Fixed length data fields are indicated by (FL); all other fields are variable in length. The maxima cited above for variable length fields are practical limits in accordance with the *ERIC Processing Manual* cataloging rules. NOT necessarily those of the computer system, which frequently includes large safety factors. Asterisks indicate fields where the cataloging limits exceed the space available on the form. If additional space is required FOR THESE FIELDS ONLY, place a pound sign (#) opposite the last line of the field in the LEFT margin. Enter the field and line numbers in bottom margin (e.g., W4) and continue with the additional data.

ERIC CLEARINGHOUSE ACQUISITIONS DATA

CLEARINGHOUSE ACCESSION NO.	AUTHOR	TITLE
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1. What types of instructional aids are available from ERIC?
P I courses, video material, other types?
2. Have automatic indexing or abstracting ever been considered to replace manual indexing and abstracting? If no, why not? If yes, what types of indexing have been considered--syntactical, statistical, or associative?
3. How did you build your original thesaurus? e.g. modify an existing thesaurus, ask experts in the field for key terms, index representative documents.
4. Do you update your thesaurus? How often?
5. Do you have any SDI services? If yes, what are they? If no, have you considered it?
6. Have copyright laws hindered your operation in any way?
7. Approximately what percentage of your staff has an Education degree?
Bachelors Masters PhD
8. Approximately what percentage of your staff has an Information Science degree?
Bachelors Masters PhD
9. Approximately what percentage of your staff has a Library Science degree?
Bachelors Masters PhD
10. How do you solicit documents?
11. Are good thesis papers used in your data base?
13. Do you perform only document retrieval or do you also perform fact retrieval?
14. Why do you think the original concept of state centers failed?
15. Do you consider your center/organization an information center or an information analysis center? Why?

Survey Results

Question #	Exceptional Children Center	Higher Education Center	Information Resources Center
1	all ERIC documents are on print or microform	written information primarily	only printed material
2	Central ERIC question	no	ask NIE
3	Central ERIC question	examination of documents by experts	see ED 010 239
4	Central ERIC question	monthly for the clearinghouse, yearly for the public	quarterly
5	Central ERIC question	not familiar with SDI	if demand was large enough
6	ERIC collects those documents which are not copyrighted	may be announced in RIE without approval	not a hinderance but a constraint
7	Bachelors 6 members Masters 1 member PhD 3 members	Bachelors 80% Masters 56% PhD 33%	Bachelors ----- Masters ----- PhD 33% of professional staff
8	-----	0%	0%
9	Masters 1 member	0%	1/6 of professional staff
10	Central ERIC question	direct letter	subscribe to SSIE, screen journals and newsletters, collect conference programs, send letters to researchers
11	Central ERIC question	yes	PhD thesis if not in Dissertation Abstracts
12	in own center	Systems Development Corp Santa Monica	Lockheed/DIALOG Palo Alto

Question #	Exceptional Children Center	Higher Education Center	Information Resources Center
13	document retrieval	both	document retrieval
14	Central ERIC question	no knowledge of the question	not familiar with the program
15	Information Center	both	Information Analysis Center

DESCRIPTOR JUSTIFICATION AND DATA INPUT FORM

M	ADD
D	DELETE
S	CHANGE
	PLURCE
L	REPLACE

1. Main Term (50 Character Limit)

TERM

3. Scope Note (100 Character Limit)

SCOPE

4. Broader Terms

BT

5. Narrower Terms

NT

6. Used For (i.e., Synonyms)

UF

7. Related Terms

RT

☐ Entering New Term☐ Modifying an Existing Term

ELITE (12 pitch) typewriters stop at first mark.
 PICA (10 pitch) typewriters stop at end of block.

Action Codes for Modifications Only:

A - ADD C - CHANGE D - DELETE

2. Group Code Act.

GROUP ☐

DO NOT KEY DATA BELOW THIS LINE

8. Justification Information
(Use reverse side if necessary)

A. Indexer & CH

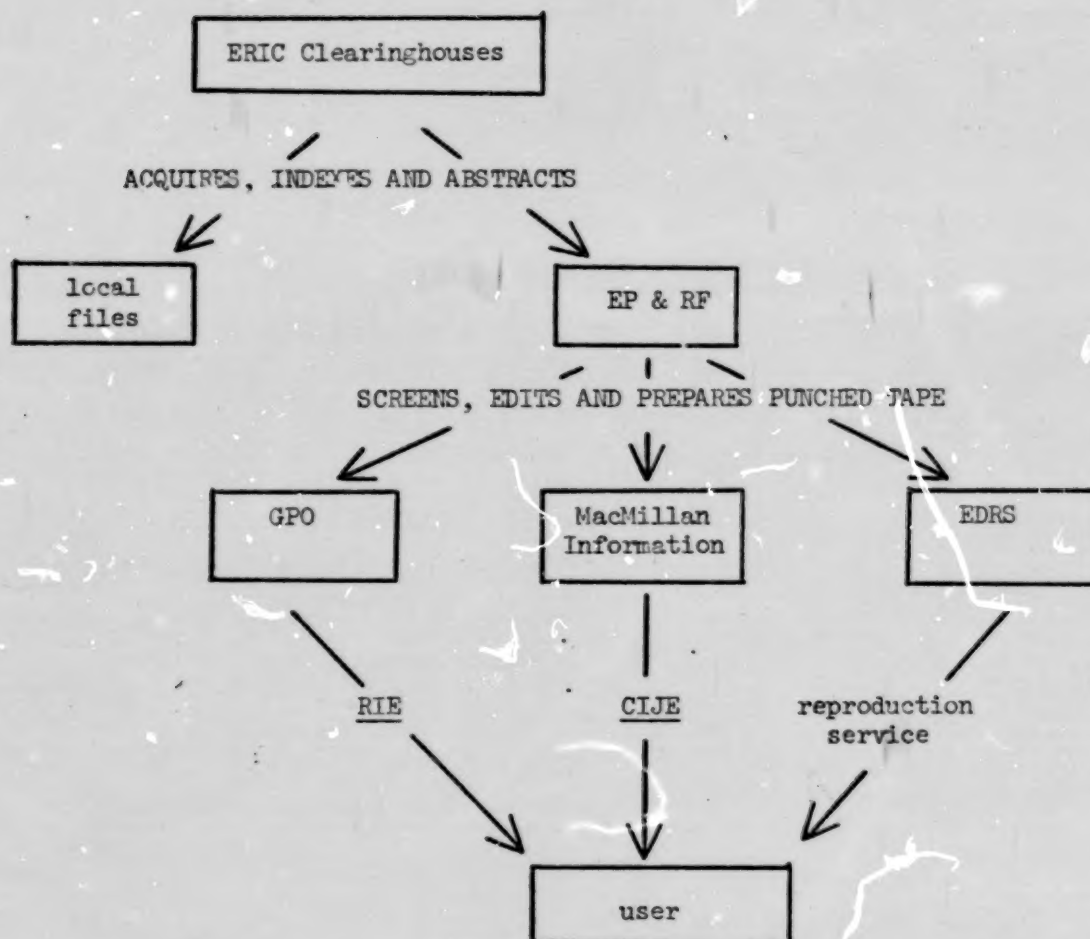
B. Supervisory Approval & Date

C. Accession No(s).

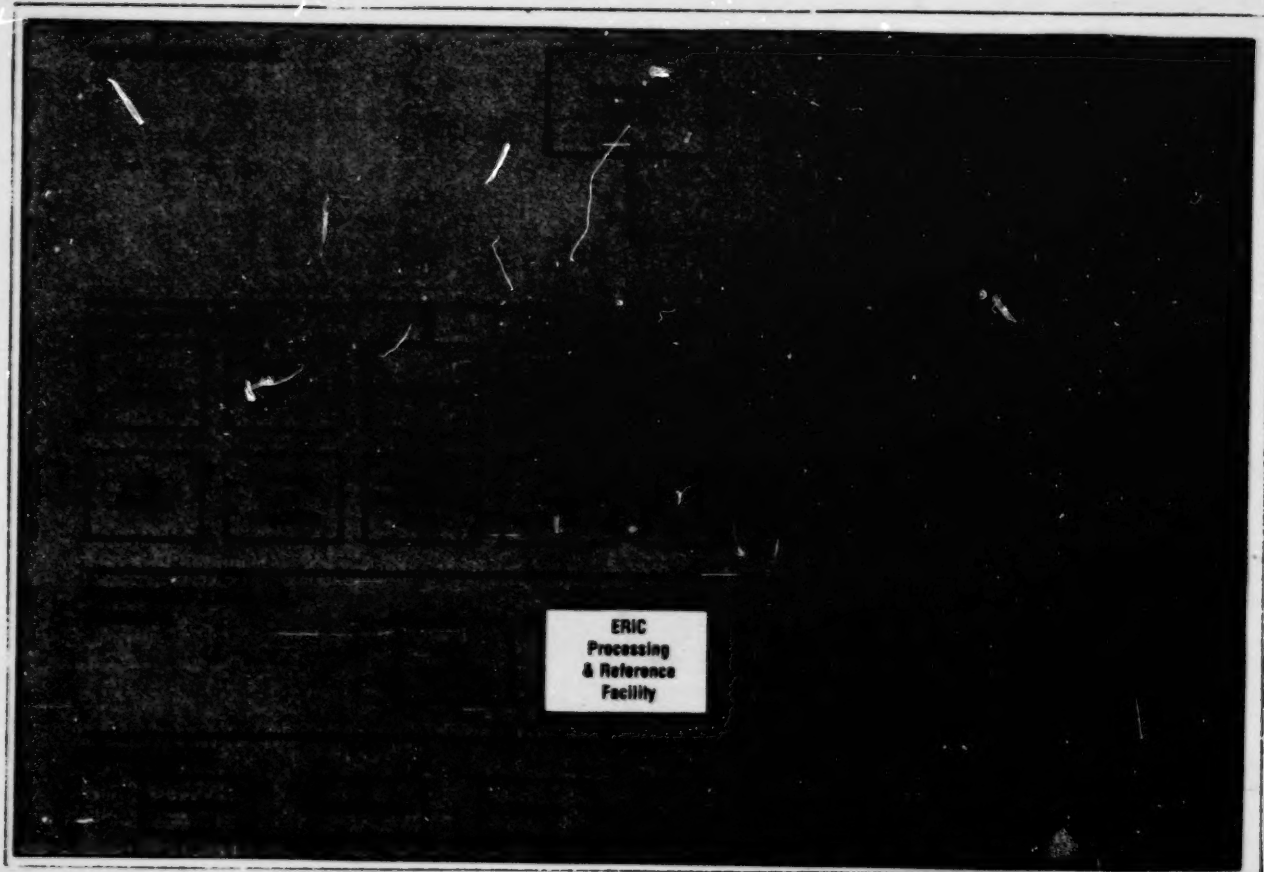
Use reverse side of form for:

D. Authorities Used

E. Definition of Term

DOCUMENT PROCESSING

ORGANIZATIONAL STRUCTURE OF ERIC



(This digram was taken from "ERIC A Profile")

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3. J. L. Eller, "The Development and Potentials of the ERIC Thesaurus for Educators", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970.
4. J. D. Fife, written questionnaire, August, 1974.
5. J. Houston, personal interview, August 2, 1974.
6. M. L. Howden, personal interview, August 2, 1974.
7. J. L. Laffey, "Highlights in the Development of the ERIC Clearinghouse on Reading", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970.
8. H. Marron, "Management of a Decentralized Information System", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970.
9. L. Mathies, "The Educational Resources Information Center: An Agent of Change", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970.
10. D. Slawsky, personal interview, August 2, 1974.
11. J. F. Vinsonhaler and R. D. Moon, "Information Systems Application In Education", Annual Review of Information Science and Technology, Volume 8, 1973.

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12. ERIC Products 1972-1973, an annotated Bibliography of Information Analysis Publications of the ERIC Clearinghouses, S. G. Maury, editor.
13. ERIC A Profile, Educational Resources Information Center, National Institute of Education.

14. ERICTAPES/ERICTOOLS, LEASCO Systems and Research Corporation.
15. Material on the ERIC thesaurus development supplied by James Houston,
ERIC Processing and Reference Facility lexicographic staff.

ENDNOTES

¹L. Mathies, "The Educational Resources Information Center: An Agent of Change", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970, p. 124.

²J. L. Laffey, "Highlights in the Development of the ERIC Clearinghouse on Reading", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970, p. 83.

³J. F. vinsonhaler and R. D. Moon, "Information Systems Applications in Education". Annual Review of Information Science and Technology, Volume 8, 1973, p. 279.

⁴H. Marron, "Management of a Decentralized Information System", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970, p. 73.

⁵ERIC A Profile. Educational Resources Information Center, National Institute of Education.

⁶L. Mathies, "The Educational Resources Information Center: An Agent of Change", Journal of Educational Data Processing, Volume 7, Number 2, April, 1970, p. 125.